

Viscosity Agents vs. Invert Emulsions for Glyphosate Efficacy.

02-1-M125

OBJECTIVE: Evaluate the effect of viscosity agents and invert emulsions on the efficacy of glyphosate applied using various spray nozzels.

SUMMARY: The purpose of this study was to determine the effect of viscosity agents (30% PA and HPG) and invert emulsions (Placement and Lox) on weed control when Roundup UltraMax is applied with regular flat fan nozzles and various drift reduction nozzles. A very low rate of Roundup UltraMax (1/4 of the normal 26 oz use rate) was used to detect differences between treatments. Roundup UltraMax provided complete control of giant foxtail regardless of nozzle type or additive. This low rate of Roundup UltraMax only provided suppression of fall panicum with a slight (6 to 7%) reduction in control observed when Lox was added to Roundup UltraMax applied with the drift guard nozzles. Common lambsquarters control at 14 DAT (days after treatment) was reduced when Lox was added to Roundup UltraMax applied with Flat Fan nozzles and when any additive was used with Roundup UltraMax applied with Air Induction nozzles. However, these differences were not observed at 28 DAT. A lack of significant rainfall for at least 14 days prior to and after these treatments were applied most likely reduced the effect different nozzle types and additives may have had on weed control with Roundup UltraMax.

HERBICIDES/ADJUVANTS/NOZZLES

ROUNDUP ULTRA MAX 3.7 SL
30% PA 100 LIQ
HPG 77.5 WG
LOX 100 LIQ
PLACEMENT 100 LIQ
AIR INDUCTION NOZZLES
DRIFT GUARD NOZZLES
FLAT FAN NOZZLES
TURBO TEEJET NOZZLES

WEEDS

foxtail, giant
lambsquarters, common
panicum, fall
velvetleaf
waterhemp, common

CROP

soybean

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Viscosity Agents vs. Invert Emulsions for Glyphosate Efficacy.

Project Code: 02-1-M125 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
 Trial Status: Final Updated: 10-31-02

Objective:

Evaluate the effect of viscosity agents and invert emulsions on the efficacy of glyphosate applied using various spray nozzels.

| Weed Code | Common Name | Scientific Name |
|-----------|-----------------------|--------------------------------|
| 1. CHEAL | lambsquarters, common | Chenopodium album L. |
| 2. ABUTH | velvetleaf | Abutilon theophrasti Medicus |
| 3. AMATA | waterhemp, common | Amaranthus rudis Sauer |
| 4. SETFA | foxtail, giant | Setaria faberi Herrm. |
| 5. PANDI | panicum, fall | Panicum dichotomiflorum Michx. |

Crop 1: GLXMA soybean Variety: Asgrow 4602 RR
 Planting Method: Seeded Planting Date: 6-1-02
 Rate: 75 lb/A Depth: 1.0 IN
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 28 FT Reps: 4
 Tillage Type: Reduced-Till Study Design: Randomized complete block
 Previous Crop, Year: ZEAMX, 2001

Field Prep./Maintenance: N 0 LB/A, P205 50 LB/A, K20 150 LB/A

Soil Name: Weir % OM: 1.8 pH: 5.7 CEC: 10
 Texture: Silt loam Fert. Level: P1: 98 LB/A, K: 258 LB/A

APPLICATION DESCRIPTION

A

Application Date: 7-2-02
 Time of Day: 14:00
 Application Method: Spray
 Application Timing: 6-8"W
 Applic. Placement: BROFOL
 Air Temp., Unit: 94 F
 % Relative Humidity: 40
 Wind Velocity, Unit: 3-5 MPH
 Dew Presence (Y/N): N
 Soil Moisture: BELNOR
 % Cloud Cover: 25

CROP STAGE AT EACH APPLICATION

A

Crop 1 Code, Stage: GLXMA V3
 Height, Unit: 6-8 IN

WEED STAGE AT EACH APPLICATION

A

Weed 1 Code: CHEAL
 Stage(leaves): 2-14
 Height(inches): 1-12
 Density: Medium

Weed 2 Code: ABUTH
 Stage(leaves): 3-7
 Height(inches): 2-14
 Density: Medium

Weed 3 Code: AMATA
 Stage(leaves): 5-14
 Height(inches): 3-12
 Density: Medium

Weed 4 Code: SETFA
Stage(leaves): 5-7
Height(inches): 6-10
Density: Low

Weed 5 Code: PANDI
Stage(leaves): 3-5
Height(inches): 3-10
Density: High

APPLICATION EQUIPMENT

A

Appl. Equipment: CO2 sprayer
Operating Pressure: 40 PSI
Nozzle Type: See note
Nozzle Size: 110015
Boom Length, Unit: 7.5 FT
Spray Volume, Unit: 10 GPA

NOTES:

Nozzel types are flat fan, drift guard, turbo teejet, and air induction,
see treatment list.
This study was not harvested.

Viscosity Agents vs. Invert Emulsions for Glyphosate Efficacy.

Project Code: 02-1-M125 Location: Belleville Research Center

| | | | | | | | | | | | | | | | | | |
|-------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Weed Code | | | | | | | | | | | | | | | | | |
| Crop Code | | | | | | | | | | | | | | | | | |
| Rating Data Type | | | | | | | | | | | | | | | | | |
| Rating Unit | | | | | | | | | | | | | | | | | |
| Rating Date | | | | | | | | | | | | | | | | | |
| Trt-Eval Interval | | | | | | | | | | | | | | | | | |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Prod Rate | Prod Unit | Grow Stg | Appl Code | GLXMA Injury Percent 7-16-02 14 DA-A | GLXMA Injury Percent 7-30-02 28 DA-A | SETFA Control Percent 7-16-02 14 DA-A | SETFA Control Percent 7-30-02 28 DA-A | PANDI Control Percent 7-16-02 14 DA-A | PANDI Control Percent 7-30-02 28 DA-A | CHEAL Control Percent 7-16-02 14 DA-A | CHEAL Control Percent 7-30-02 28 DA-A | ABUTH Control Percent 7-16-02 14 DA-A | ABUTH Control Percent 7-30-02 28 DA-A | AMATA Control Percent 7-16-02 14 DA-A | AMATA Control Percent 7-30-02 28 DA-A |
|---------|----------------------|-----------|-----------|--------|--------------|-----------|------------|----------|-----------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 1 | NONTREATED | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | FLAT FAN NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 60 | 53 | 72 | 61 | 21 | 34 | 80 | 58 |
| 2 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 3 | FLAT FAN NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 58 | 50 | 73 | 48 | 25 | 43 | 88 | 57 |
| 3 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 3 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 4 | FLAT FAN NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 56 | 54 | 73 | 65 | 23 | 39 | 86 | 55 |
| 4 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 4 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 5 | FLAT FAN NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 58 | 51 | 70 | 60 | 21 | 36 | 78 | 69 |
| 5 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 5 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 6 | FLAT FAN NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 58 | 51 | 63 | 64 | 23 | 39 | 78 | 69 |
| 6 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 6 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 7 | DRIFT GUARD NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 64 | 55 | 66 | 60 | 28 | 41 | 88 | 69 |
| 7 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 8 | DRIFT GUARD NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 64 | 54 | 72 | 69 | 23 | 28 | 88 | 64 |
| 8 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 8 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 9 | DRIFT GUARD NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 69 | 54 | 72 | 61 | 30 | 48 | 88 | 61 |
| 9 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 9 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 10 | DRIFT GUARD NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 68 | 51 | 67 | 62 | 30 | 43 | 89 | 65 |
| 10 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 10 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 11 | DRIFT GUARD NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 58 | 48 | 65 | 43 | 26 | 38 | 89 | 53 |
| 11 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 11 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 12 | TURBO TEEJET NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 56 | 48 | 67 | 47 | 20 | 30 | 85 | 53 |
| 12 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |

| Weed Code | GLXMA | GLXMA | SETFA | SETFA | PANDI | PANDI | CHEAL | CHEAL | ABUTH | ABUTH | AMATA | AMATA |
|-------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Crop Code | Injury | Injury | Control | Control | Control | Control | Control | Control | Control | Control | Control | Control |
| Rating Data Type | Percent | Percent | Percent | Percent | Percent | Percent | Percent | Percent | Percent | Percent | Percent | Percent |
| Rating Unit | 7-16-02 | 7-30-02 | 7-16-02 | 7-30-02 | 7-16-02 | 7-30-02 | 7-16-02 | 7-30-02 | 7-16-02 | 7-30-02 | 7-16-02 | 7-30-02 |
| Rating Date | 14 DA-A | 28 DA-A | 14 DA-A | 28 DA-A | 14 DA-A | 28 DA-A | 14 DA-A | 28 DA-A | 14 DA-A | 28 DA-A | 14 DA-A | 28 DA-A |
| Trt-Eval Interval | | | | | | | | | | | | |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Prod Rate | Prod Unit | Grow Stg | Appl Code | | | | | | | | | | | | |
|-------------------|-----------------------|-----------|-----------|--------|--------------|-----------|------------|----------|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|--------|
| 13 | TURBO TEEJET NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 63 | 53 | 64 | 53 | 24 | 43 | 83 | 58 |
| 13 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 13 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 14 | TURBO TEEJET NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 58 | 51 | 70 | 55 | 24 | 26 | 84 | 68 |
| 14 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 14 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 15 | TURBO TEEJET NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 56 | 48 | 64 | 41 | 25 | 38 | 85 | 59 |
| 15 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 15 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 16 | TURBO TEEJET NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 61 | 50 | 62 | 54 | 18 | 35 | 81 | 50 |
| 16 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 16 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 17 | AIR INDUCTION NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 64 | 51 | 77 | 45 | 29 | 41 | 90 | 61 |
| 17 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 18 | AIR INDUCTION NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 61 | 49 | 66 | 61 | 29 | 46 | 86 | 59 |
| 18 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 18 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 19 | AIR INDUCTION NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 60 | 50 | 67 | 49 | 29 | 46 | 85 | 50 |
| 19 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 19 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | | 6-8"W A | | | | | | | | | | | | |
| 20 | AIR INDUCTION NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 61 | 55 | 71 | 63 | 29 | 38 | 88 | 58 |
| 20 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 20 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 21 | AIR INDUCTION NOZZLES | | | | | | | | | 0 | 0 | 99 | 99 | 59 | 51 | 63 | 58 | 25 | 45 | 90 | 60 |
| 21 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 21 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | | 6-8"W A | | | | | | | | | | | | |
| 22 | NONTREATED | | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LSD (P=.05) | | | | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 7.0 | 5.7 | 6.9 | 10.9 | 7.7 | 9.8 | 5.7 | 11.8 |
| Replicate F | | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 1.056 | 23.112 | 4.374 | 3.142 | 9.470 | 1.330 | 20.467 | 1.014 |
| Replicate Prob(F) | | | | | | | | | | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.3741 | 0.0001 | 0.0077 | 0.0317 | 0.0001 | 0.2725 | 0.0001 | 0.3933 |
| Treatment F | | | | | | | | | | 0.000 | 0.000 | 0.000 | 0.000 | 53.299 | 58.214 | 68.915 | 21.986 | 8.893 | 13.532 | 156.559 | 19.507 |
| Treatment Prob(F) | | | | | | | | | | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 |

| | | | |
|-------------------|---------|---------|---------|
| Weed Code | CHEAL | ABUTH | AMATA |
| Crop Code | | | |
| Rating Data Type | Plants | Plants | Plants |
| Rating Unit | 1.0 m2 | 1.0 m2 | 1.0 m2 |
| Rating Date | 7-23-02 | 7-23-02 | 7-23-02 |
| Trt-Eval Interval | 21 DA-A | 21 DA-A | 21 DA-A |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Prod Rate | Prod Unit | Grow Stg | Appl Code | | | |
|---------|----------------------|-----------|-----------|--------|--------------|-----------|------------|----------|-----------|------|------|------|
| 1 | NONTREATED | | | | | | | | | 74.5 | 20.5 | 25.5 |
| 2 | FLAT FAN NOZZLES | | | | | | | | | 13.5 | 28.5 | 21.5 |
| 2 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 3 | FLAT FAN NOZZLES | | | | | | | | | 37.0 | 20.5 | 4.5 |
| 3 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 3 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | 6-8" | W A | | | |
| 4 | FLAT FAN NOZZLES | | | | | | | | | 9.5 | 25.5 | 4.5 |
| 4 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 4 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | 6-8" | W A | | | |
| 5 | FLAT FAN NOZZLES | | | | | | | | | 22.0 | 29.5 | 34.0 |
| 5 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 5 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 6 | FLAT FAN NOZZLES | | | | | | | | | 34.0 | 13.0 | 11.5 |
| 6 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 6 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | 6-8" | W A | | | |
| 7 | DRIFT GUARD NOZZLES | | | | | | | | | 47.5 | 22.0 | 5.0 |
| 7 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 8 | DRIFT GUARD NOZZLES | | | | | | | | | 13.0 | 24.0 | 12.0 |
| 8 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 8 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | 6-8" | W A | | | |
| 9 | DRIFT GUARD NOZZLES | | | | | | | | | 6.0 | 12.5 | 7.5 |
| 9 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 9 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | 6-8" | W A | | | |
| 10 | DRIFT GUARD NOZZLES | | | | | | | | | 19.5 | 15.0 | 7.0 |
| 10 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 10 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 11 | DRIFT GUARD NOZZLES | | | | | | | | | 82.5 | 18.5 | 3.5 |
| 11 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 11 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | 6-8" | W A | | | |
| 12 | TURBO TEEJET NOZZLES | | | | | | | | | 36.0 | 35.0 | 10.0 |
| 12 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 13 | TURBO TEEJET NOZZLES | | | | | | | | | 45.0 | 19.0 | 9.0 |
| 13 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 13 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | 6-8" | W A | | | |

| | | | |
|-------------------|---------|---------|---------|
| Weed Code | CHEAL | ABUTH | AMATA |
| Crop Code | | | |
| Rating Data Type | Plants | Plants | Plants |
| Rating Unit | 1.0 m2 | 1.0 m2 | 1.0 m2 |
| Rating Date | 7-23-02 | 7-23-02 | 7-23-02 |
| Trt-Eval Interval | 21 DA-A | 21 DA-A | 21 DA-A |

| Trt No. | Treatment Name | Form Conc | Form Type | Rate | Rate Unit | Prod Rate | Prod Unit | Grow Stg | Appl Code | | | |
|-------------------|-----------------------|-----------|-----------|--------|--------------|-----------|------------|----------|-----------|--------|--------|--------|
| 14 | TURBO TEEJET NOZZLES | | | | | | | | | 17.5 | 27.5 | 1.5 |
| 14 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 14 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | 6-8" | W A | | | |
| 15 | TURBO TEEJET NOZZLES | | | | | | | | | 73.5 | 21.0 | 6.0 |
| 15 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 15 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 16 | TURBO TEEJET NOZZLES | | | | | | | | | 56.0 | 25.0 | 8.5 |
| 16 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 16 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | 6-8" | W A | | | |
| 17 | AIR INDUCTION NOZZLES | | | | | | | | | 54.0 | 16.5 | 11.5 |
| 17 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 18 | AIR INDUCTION NOZZLES | | | | | | | | | 36.5 | 15.0 | 12.5 |
| 18 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 18 | 30% PA | 100 | LIQ | 0.0312 | % V/V | 4 | OZ/100 GAL | 6-8" | W A | | | |
| 19 | AIR INDUCTION NOZZLES | | | | | | | | | 52.5 | 18.5 | 24.5 |
| 19 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 19 | HPG | 77.5 | WG | 8.0 | OZ A/100 GAL | 10.3 | OZ/100 GAL | 6-8" | W A | | | |
| 20 | AIR INDUCTION NOZZLES | | | | | | | | | 30.0 | 31.0 | 17.0 |
| 20 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 20 | PLACEMENT | 100 | LIQ | 6.5 | FL OZ/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 21 | AIR INDUCTION NOZZLES | | | | | | | | | 71.5 | 17.0 | 3.5 |
| 21 | ROUNDUP ULTRA MAX | 3.7 | SL | 0.188 | LB AE/A | 6.5 | OZ/A | 6-8" | W A | | | |
| 21 | LOX | 100 | LIQ | 6.0 | FL OZ/A | 6 | OZ/A | 6-8" | W A | | | |
| 22 | NONTREATED | | | | | | | | | 97.0 | 35.5 | 54.5 |
| LSD (P=.05) | | | | | | | | | | 62.76 | 21.57 | 28.23 |
| Replicate F | | | | | | | | | | 1.473 | 6.239 | 0.230 |
| Replicate Prob(F) | | | | | | | | | | 0.2305 | 0.0009 | 0.8749 |
| Treatment F | | | | | | | | | | 1.343 | 0.776 | 1.541 |
| Treatment Prob(F) | | | | | | | | | | 0.1838 | 0.7360 | 0.0958 |

Viscosity Agents vs. Invert Emulsions for Glyphosate Efficacy.

Project Code: 02-1-M125

Location: Belleville Research Center

Trial Comments

1. Protocol: ISPOB/BGY.
2. DA-A = days after 6-8"W application. 1.0 m² = one square meter.